

WHAT IS CLAIMED IS:

1. A method for manufacturing a semiconductor device, the method comprising:

 successively depositing gate insulating layer forming material and gate electrode forming material on a semiconductor substrate;

 patterning the gate insulating layer forming material and the gate electrode forming material to form a gate insulating layer and a gate electrode;

 performing a nitrogen ion-implantation to a front face of the substrate; and

 annealing the substrate so as to form a re-oxidation layer that has different thickness on the sidewalls of the gate electrode and on the substrate.
2. A method for manufacturing a semiconductor device as claimed in claim 1, wherein energy of nitrogen ion implantation is 10 to 50keV.
3. A method for manufacturing a semiconductor device as claimed in claim 1, wherein dose of nitrogen ion implantation is 10^{14} to 5×10^{15} atoms/cm².
4. A method for manufacturing a semiconductor device as claimed in claim 1, wherein an angle of nitrogen ion implantation is vertical to the substrate.
5. A method for manufacturing a semiconductor device as claimed in claim 4, wherein the energy of nitrogen ion implantation is 10 to 50keV.
6. A method for manufacturing a semiconductor device as claimed in claim 4, wherein dose of nitrogen ion implantation is 10^{14} to 5×10^{15} atoms/cm².